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HAS HARDCASTLE LOCATED CONSCIOUSNESS?
Book Review of Hardcastle on Locating-Consciousness

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Abstract

> Valerie Hardcastle's book, Locating Consciousness, presents a novel hypothesis about the physiological location of consciousness in the human brain. However, it fails to take a stand on the ontological status of consciousness, and even wavers back and forth between an identity theory of psychophysical relations and a functional theory.

Keywords

binding, consciousness, dynamical system, memory, priming, qualia. 1. Valerie Hardcastle's book, Locating Consciousness (Hardcastle, 1995), is interesting, original, important, and full of errors of every imaginable kind. The fourth sentence of the book begins "I go to the symphony and hear symbols crashing" (Hardcastle, 1995, p. 1). The unfortunate spelling mistake is amusing by itself, especially in light of the importance of the term "symbol" in recent debates about psychophysical relations and psychological explanation, but it is part of a pattern of blunders that pervades the book. There is a typographical, spelling, or grammatical error of some sort on nearly every one of its 194 pages. The mistakes are so common that the dominant impression the book leaves is that it needs a good copyeditor.

2. The errors are not merely mechanical, however. Although Hardcastle delivers on the promise implicit in the title by locating consciousness in the physiological sense, she fails to locate it in the more important ontological sense. Her thesis that consciousness is localizable to the areas of sensory cortex that implement a "semantic (SE)" memory system, true or false, is at least clear and unequivocal. On the other hand, Hardcastle wavers between identifying consciousness with

the specific neural systems that implement the SE system and identifying it with the patterns of activation implemented in these neural systems. That is, she wavers between the identity theory and functionalism with respect to the mental.

3. Hardcastle's functionalist proposal is that "we can locate consciousness in the dynamical structure of the neural firing patterns" (xiv) and that "conscious states could be mapped to the transient firing patterns of groups of neurons whose behavior has a particular mathematical dynamical description" (p. 132). In particular, Hardcastle identifies consciousness with the activation of relatively stable attractor basins in a chaotic dynamic system implemented in sensory cortex. This view is similar to that espoused by Timothy van Gelder (van Gelder, 1993), and it is, indeed, a substantially different conception of computation than that envisioned in the "Classical" artificial-intelligence paradigm of von Neumann style rule-based computation over discrete representations. Nevertheless, it is a functionalist position: like computational functionalism, dynamic systems functionalism insists that thinking systems have properties that are not type-reducible to physical properties. Where computational functionalism takes the function to be discrete, Hardcastle's dynamic systems functionalism takes the function to be continuous.

4. As attractive as functionalism is as a theory of psychological explanation, it suffers from a fundamental limitation when construed as a complete theory of the mind: it offers no explanation for the qualitative character of our everyday experience. It would be possible for beings functionally identical to human thinkers to lack qualia (see, for example, Block, 1978/1980). The dynamic firing patterns of the neurons in our brains could quite easily be replicated in computer simulations, but we have no reason to suppose that the computers would thereby be endowed with consciousness.

5. Early in the book, Hardcastle promises to "argue that positing conscious experience is needed to account for our behavior" (p. 44), thereby short-circuiting absent qualia arguments. In Chapter 7, she purports to deliver on that promise with an argument "that for persons or objects identical to us in the relevant way, absent qualia simply are not possible" (p. 135). Unfortunately, she undermines her own arguments by failing to specify what sort of thing "the relevant way" might be. She begins by recapitulating Sydney Shoemaker's argument that no entity could know by introspection alone whether the qualia it has at any given time are ersatz or real (Shoemaker, 1975). However, when she realizes that Shoemaker's argument itself depends on the same sort of "failure of imagination" she had criticized in arguments against physicalism, she retreats. She claims that there are two possible responses. The first is to "restrict the domain of scientifically defined qualia to organically based neural systems" (p. 143). The second is to "recall that theories of neural 'instantiation' can still be part of the causal etiology of psychological events" (p. 143). Despite Hardcastle's statement to the contrary, these "two" responses are really one: identity theory with respect to consciousness. Saying that a particular neurophysiological implementation is a necessary condition for being in a particular psychological state is the same as saying that entities without the same neurophysiology cannot be in that state. Together with the claim that the implementation and certain other conditions are sufficient for being in a particular psychological

state, both claims are the same as saying that the neurophysiological state is identical with the psychological one. While the identity theory successfully avoids problems about absent qualia, it directly contradicts the dynamic systems functionalism Hardcastle espouses at other places in the book.

6. Rather than take a stand on one side or the other and accept the consequences, Hardcastle equivocates. Later in her discussion of the problem of absent qualia, she writes: "a scientific analysis of consciousness might include the relationships among mental states (as originally assumed) but (and perhaps more likely) it might include descriptions of the causal relations among neurophysiological components" (p. 144). Three pages later, however, Hardcastle changes her mind again, writing: "there is no principled division of labor between higher level psychological explanations and lower level neurophysiological explanations. ... Our world, and we in it, cannot be neatly captured in two levels of description: computing algorithms and then physical implementation. Instead, the world is better explained in terms of a more complicated and interactive arrangement" (p. 147). This is just to come down again on the side of the identity theory: if psychological explanations necessarily involve particular neurophysiological states, then those neurophysiological states are necessary for being in the corresponding psychological states. The fact that those states also implement functions that are part of our psychological explanations is irrelevant to the ontological question about the relationship between mind and brain.

7. Over the next few pages, Hardcastle continues to insist that physicalism entails the identity theory. She writes, for example: "insofar as we accept that we can adequately define our mental states in terms of a causal etiology, and since these theories are not restricted to any particular level of analysis or type of causal property, the defense of the impossibility of cognitively identical but qualitatively dissimilar mental states must go through. Indeed, if one is a physicalist of any stripe, then one would have to be committed to the impossibility of absent qualia" (p. 148). Absent qualia are impossible on the premise that the identity theory is true, but are quite possible on the premise that any kind of functionalism is true. Hardcastle's implicit identification of physicalism with the identity theory is out of order: functionalism is compatible with physicalism, too. Hardcastle cannot have it both ways: she must either endorse identity theory wholeheartedly and escape the problem of absent qualia at the cost of sacrificing her dynamic systems view, or endorse functionalism wholeheartedly and acknowledge the problem of absent qualia.

8. Hardcastle continues: "If we accept a token-token identity theory ... and the principle of supervenience, then insofar as we believe the difference between ersatz pain and real pain is a mental difference, we have to believe that they also differ physically" (p. 148). This is absolutely true. However, the conclusion Hardcastle draws in the next sentence ("if they differ physically, then there has to be some difference in their respective causal powers") is manifestly false: two quite different carburetors may both do identical jobs of mixing appropriate proportions of gasoline and air. Strictly speaking, it is true that a physical difference must entail some difference in causal powers; it is not, however, true that the difference must be relevant to the level of explanation in

question. Hardcastle insists that "Since a cognitive definition is not restricted to any particular type of causal power, then whatever difference exists between ersatz pain and real pain must be capturable in a cognitive theory" (p. 148). It is quite true that cognitive explanations are not restricted a priori to particular levels; it is, as Hardcastle points out, an open empirical question whether psychological explanation needs to restrict itself to the physical or the functional level. Therefore, it is strictly speaking true that whatever causal difference exists between two physically different systems must be capturable in some cognitive theory. However, the question is whether it is capturable in a true cognitive theory. If functionalism turns out to be true, then certain physical differences will not be captured in the correct psychological theory. Even if a token identity theory turns out to be true, certain lower-level physical differences between two individuals (for example, the exact numbers of water molecules in their neurons) will not be relevant to psychological explanations.

9. Hardcastle concludes "So mental states psychologically identical to conscious ones, though lacking a qualitative character, cannot exist" (p. 148). The proper conclusion to draw would be: mental states physiologically identical to conscious ones, though lacking a qualitative character, cannot exist. Hardcastle simply has not taken seriously the possibility that a functionalist theory of psychological explanation might be true, despite the fact that she herself gives a functionalist explanation of SE memory. She does qualify her conclusion: "At least, either we accept physicalism and that absent qualia are impossible, or we ascribe [sic] to some sort of dualism and assert that the qualitative character of mental states are [sic] epiphenomenal and beyond the pale of scientific theorizing" (p. 148). This is an argument for the identity theory in the guise of a definition of physicalism. It would be better written "Either we accept the identity theory and that absent qualia are impossible, or we subscribe to some sort of functionalism and assert that the qualitative character of mental states is epiphenomenal". This may be true, but it is not news. Moreover, Hardcastle fails to realize that, together with her rejection of epiphenomenalism and her dynamic systems functionalism about the SE system, it entails a contradiction.

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